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☐	L5	(channel$ near3 identif$4) and (beam near2 form$3)	192
☐	L4	375/130.ccls. or 375/141.ccls. or 375/144.ccls. or 375/146.ccls. or 375/147.ccls. or 375/148.ccls. or 375/335.ccls. or 370/342.ccls. or 370/441.ccls.	3288
☐	L3	L2 and cdma	11
☐	L2	(observat$3 near3 vector$)	711
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L3: Entry 6 of 11 File: USPT May 29, 2001

DOCUMENT-IDENTIFIER: US 6240098 B1
TITLE: Method and device for space division multiplexing of radio signals transmitted in cellular radio communications

Brief Summary Text (6):
Conventional techniques currently make it possible to multiplex communications in frequency division (FDMA), in time division (TDMA) or in code division (CDMA).

Brief Summary Text (9):
CDMA (Code Division Multiple Access) consists in allocating each communication a code defining a frequency hop law over short time intervals. Although it does allow some improvement in the spectral efficiency (progressive saturation by signal degradation rather than abrupt saturation by service interruption, as in the case of the previous two techniques), this method remains involved and expensive to implement.

Detailed Description Text (94):
Whitening the signals then consists simply in applying the whitening matrix to the observation vector, which gives the following formula for the whitened data:

L3: Entry 7 of 11 File: USPT Jan 25, 2000

DOCUMENT-IDENTIFIER: US 6018317 A
TITLE: Cochannel signal processing system

Detailed Description Text (352):
Code division multiplexing/multiple access (CDM/CDMA)

Detailed Description Text (359):
SHMA prevents cochannel interference by prohibiting intracell frequency reuse and allowing only intercell frequency reuse. The remaining four channel access schemes TDMA, CDMA, FHMA, and ADMA overcome this restriction and enable frequency reuse among users within a cell-intracell frequency reuse.

Detailed Description Text (361):
CDMA is a form of direct sequence spread spectrum in which the various users encode their transmissions with orthogonal or nearly orthogonal spreading sequences. All transmitting users use the same frequency. In order to receive a particular signal, a receiver must despread the signal using the same sequence that was used to spread it at the transmitter. Because of the orthogonality property, the cross-correlation between any two spreading codes is near zero. For this reason, the user signals after reception and despreading are free of cochannel interference. CDMA is the basis of the IS-95 communication standard.

Detailed Description Text (362):
FHMA is used to apply frequency hop spread spectrum technology to communication networks. A set of frequency hopping (FH) radios operate in the same band on the same hop frequencies and transmit to a central receiving facility or base station without mutual interference provided the radios use non-interfering hop sequences. Unlike CDMA, the required sequence property is not orthogonality or low cross-correlation, but rather a mathematical relative of the Latin Square. FHMA can be thought of as a dynamic form of FDMA in which the frequency assignments change regularly.

Detailed Description Text (533):
which results in the modified observation model ##EQU35## in which the vector v.sub.k is the kth column of V. Since V is a unitary matrix, we have the following relationship between the modified steering vectors (b.sub.k s): ##EQU36##

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L3: Entry 7 of 11 File: USPT Jan 25, 2000

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L3: Entry 9 of 11 File: USPT Feb 2, 1999

DOCUMENT-IDENTIFIER: US 5867411 A
TITLE: Kalman filter ionospheric delay estimator

Brief Summary Text (5):
Parameter estimators have been used to generate parameters estimates of parameters estimated from an input. Bias estimators have been used to generate bias esitmates of bias of an input. The parameter estimators and bias estimators are methods having many possible applications. One such application is range determination of the Gobal Positioning System (GPS) generating pseudoranges which are affected by potential bias, ionospheric propagation delays and phase ambiguities producing ranging errors. GPS receivers are used to acquire position on ground, in air or in space based upon the reception of satellite signals transmitted from the GPS satellite constellation. From the GPS satellite transmit antenna, the satellite signals propagate through free space, the ionosphere and the troposphere to the GPS receiver. The GPS constellation consists of 24 satellites operating in twelve-hour orbits at an altitude of 20,183 km and provides visibility of six to eleven satellites at elevations of five degrees or more above the horizon to users located anywhere in the world at any time. The navigation signals from the satellites consist of two rf frequencies, L.sub.1 at 1575.42 MHz and L.sub.2 at 1227.6 MHz. The L.sub.1 and L.sub.2 signals are modulated by pseudo-random noise (PN) or spread-spectrum (SS) codes and are also modulated with the navigation data-stream at 50 bps carrying various navigation messages. The signals transmitted from different satellites occupy the same rf bandwidth on a Code Division Multiple Accessing (CDMA) basis. In the CDMA techniques, different PN codes are assigned to different satellites and the receiver matches these codes with like reference codes generated in the receiver through cross-correlation technique implemented in Delay Lock Loops (DLLs). Individual DLLs are assigned to different satellites being tracked by the receiver in a parallel approach or a single loop is shared in a time division mode among many satellites in a single channel and less expansive receivers. In addition to making it possible to separate signals from different GPS satellites, the PN codes also make it possible to measure the range to the satellite by measuring the signal propagation delay from the satellite to the GPS receiver by measuring the relative phase of the received signal code phase with the local reference code phase. The accuracy with which such a propagation delay can be measured depends upon the PN code chip rate, the latter directly determining the rf bandwidth of the spread spectrum modulated signal. The measurement accuracy of the propagation delay is equal to a fraction of the PN code chip period, that is, the inverse of the code chip rate. The actual fraction depends upon the various details of receiver implementation and various sources of errors. Each GPS satellite has two codes assigned to it, a distinct C/A code with a chip rate of 1.023 MHz and a P-Code with different offsets and with a chip rate of 10.23 MHz. The L.sub.1 signal is modulated with both the P and C/A codes in phase quadrature and the L.sub.2 signal is modulated with the P-Code.

Detailed Description Text (5):
The bank of Kalman filters 16 is used to resolve ambiguities. In the state space formulation, x (k) represents the state vector at the kth update discrete time interval. The range equations may be rewritten in compact form by an x (k) vector definition state equation, a z(k) vector measurement state equation, a z(k) vector measurement definition state equation and a vector observation noise definition

state equation all four of which are collectively referred to as state equations which use an H matrix defined by an H Matrix equation. ##EQU2##

Detailed Description Text (26):
In the presence of bias, the z (k) vector measurement equation is replaced by a modified observation vector equation using a b matrix equation.

Detailed Description Text (27):
Observation Vector Equation

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L3: Entry 10 of 11 File: USPT Dec 1, 1998

DOCUMENT-IDENTIFIER: US 5845208 A
TITLE: Method for estimating received power and a receiver

Brief Summary Text (3):
It is typical of a cellular radio environment that conditions for radio wave propagation change constantly. This is due to changes in the location of mobile stations with respect to the base station, as well as changes in the environment of mobile stations. In the connection between a mobile station and a base station, the attenuation to which radio waves are subjected on the radio path thus varies constantly. Consequently, especially the transmission power used by the mobile station must be monitored continuously, and adjusted at each moment of time. Generally, the aim is to minimize the transmission power used by the mobile station, so that both power consumption of the station and interference caused by the station to other connections will be minimal. Power adjustment is particularly critical in CDMA systems, in which the aim is that each base station receive the transmission of the mobile stations within its coverage area by using the same power level when possible.

Detailed Description Text (4):
in which y represents an observation vector, A is a matrix determining how an unobserved state vector x can be converted to an observation vector y, and v represents an observation noise vector. State transitions are denoted by the equation

Detailed Description Text (13):
The base station is capable of optimal adjustment of the transmission power of the mobile station by estimating measured values. The invention can be applied specifically in a CDMA cellular radio network, in which the base station must, in order to maximize the capacity of the cell, adjust the transmission power of mobile stations so that it receives all stations with the same signal strength. In this case, the accurate and rapid power adjustment enabled by the method of the invention is particularly advantageous.

Detailed Description Text (17):
In street corner situations, in which the signal propagation environment may change extremely rapidly, rapid power adjustment is necessary. In the method of the invention, the base station can adjust transmission power very rapidly on the basis of the measurement results. FIG. 3 illustrates a situation in which a mobile station which is communicating with a base station BTS1 comes to a street corner, and to the coverage area of a base station BTS2. Let us assume that the distance d1 of the base station BTS1 from the street corner is longer than that d2 of the base station BTS2. Let us further assume a system in which both base stations transmit by using the same frequency band, which is the case, e.g. in a cellular radio system applying the CDMA-multiple access method.

Detailed Description Text (22):
In accordance with a preferred embodiment of the invention, when the model describing dynamic behavior of the signal is formed, one or more interfering signals are also taken into account besides the actual signal. In such a case, it is possible to take possible correlations between signals into account. E.g. in

CDMA systems, spreading codes used for various connections are not fully independent, and thus correlation occurs between connections.